



GOODWIN

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February 16, 2017

BY CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Donna Murray
Enforcement Coordinator
United States Environmental Protection Agency, Region 1
Office of Site Remediation and Restoration
5 Post Office Square -- Suite 100
Mail Code OSRR07-2
Boston, MA 02109-3912

Re: Responses to Second Supplemental Request for Information Pursuant to Section 104 of CERCLA for the Keddy Mill Superfund Site, Windham, ME

Dear Ms. Murray:

Attached are responses to the Second Supplemental Request for Information Pursuant to Section 104 of CERCLA for the Keddy Mill Superfund Site, Windham, ME directed to Tyco International, on behalf of its subsidiary SimplexGrinnell. As stated in the Response to Question 1, Johnson Controls and Tyco International combined to create Johnson Controls International plc ("Johnson Controls") effective September 2, 2016. These responses are provided by Johnson Controls on behalf of its subsidiary SimplexGrinnell as Respondent.

Should you or others at your agency have any questions concerning these Responses, please do not hesitate to call me directly.

Sincerely,

Gregory A. Bibler

GAB
Enclosures

cc: Matthew O. Tanzer



RESPONSES TO INFORMATION REQUEST QUESTIONS

1. General Information About Respondent:

NOTE: All questions in this section refer to the present time unless otherwise indicated.

- a. For each person answering these questions on behalf of Respondent provide:
 - i. full name;
 - ii. title;
 - iii. business address; and
 - iv. business telephone number and email address.

Matthew Tanzer
Vice President, Chief Ethics & Compliance Officer
Johnson Controls
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Mark Turco
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Tyco Fire Protection Products
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Effective September 2, 2016, Johnson Controls and Tyco International combined to create Johnson Controls International plc ("Johnson Controls"). These responses are provided by Johnson Controls on behalf of its subsidiary SimplexGrinnell as Respondent.

2. Respondent's Corporate and Operational Information:

NOTE: All questions in this section refer to the period being investigated.

- a. On page 2 of your August 19, 2016 letter to ITT Corporation, you state that "only ITT Grinnell's fire protection business (and not the pipe fitting and valve business) was carved out and transferred to GFPS in 1972. The business that manufactured flanges and other pipe fittings ...was not part of the Fire Protection Division transferred to GFPS. The Fire Protection Division only manufactured automatic sprinkler devices; it fabricated automatic sprinkler systems using piping and fittings purchased from other suppliers."

Please explain the basis for this statement and provide additional documentation supporting this statement.

As explained in the August 19, 2016 letter, and based on the documents and information summarized in the letter: (1) ITT Grinnell Corporation and its predecessor, Keddy Manufacturing Corporation, manufactured flanges and other pipe fittings at the Keddy Mill Superfund Site ("Site"); (2) when ITT Grinnell Corporation divested its interest in the Grinnell Fire Protection Division, it retained ownership of the Site, as it was part of the manufacturing and supply business and not the automatic sprinkler business; (3) ITT Grinnell sold the Site to Park Corporation, and realized any proceeds from the sale of the property, in 1973 – three years before Tyco ultimately purchased Grinnell Fire Protection Systems, in 1976. As stated in the August 19 letter, therefore, Tyco neither owned nor operated nor succeeded to the liabilities of any prior owner or operator of the Site.

On January 30, 2017, ITT Corporation submitted a letter to Susan Scott responding to EPA's Invitation to Perform or Finance Proposed Cleanup Activities directed to Tyco ("ITT Letter"). A copy of the ITT Letter is attached as Exhibit 1. In that letter, ITT Corporation concurred that the Site was not part of the automatic sprinkler business that Tyco acquired from ITT Grinnell in 1976. ITT Corporation also concurred that Tyco did not assume ownership of the Site and did not assume any liability associated with the Site. ITT letter, p. 1. There should be no question, therefore, that Tyco is not a responsible party under CERCLA with respect to the Site.

ITT Grinnell's retention of the Site in 1972, when it divested itself of the Grinnell Fire Protection Division, is consistent, historically, with the distinction drawn at that time between the manufacturing and sales business (which ITT Grinnell retained) and the automatic sprinkler business (which Tyco purchased). As indicated in the attached historical materials, when ITT Grinnell divested itself of the Grinnell Fire Protection Division, it retained the manufacturing and sales divisions. Those divisions became the foundation for Grinnell Supply Sales and Manufacturing (a/k/a Supply & Sales), which continued to fabricate pipe fittings, valves, and other mechanical components. *See* Doc. 591110, Gale Directory of Company Histories – Grinnell Corp., pp. 3-4. *See* attached Exhibit 2, The Station House, "Fire Sprinkler History – NFSA, NFPA & Tyco," p. 5 ("ITT retained the manufacturing and sales divisions – laying the groundwork for Grinnell Supply Sales as a separate entity."); Tyco, "Our History" (describing Grinnell Supply Sales and Manufacturing as a "a manufacturer and distributor of flow control and fire protection products").

- b. The September 24, 1971 decision of the United States District Court for the District of Connecticut ("Final Judgment")¹ required ITT to spin off the "Fire Protection Division of Grinnell" which was defined in Section 11(D) of the Final Judgment as "[t]he assets and operations of Grinnell Corporation and any of its subsidiaries related to *the manufacture of* automatic sprinkler devices of [sic] *the fabrication*, installation or sale of automatic sprinkler systems, and shall include the name 'Grinnell' and any related names or trademarks now used in said

¹ *United States v. International Telephone & Telegraph Corp.*, 1971 US. Dist. LEXIS 11507; 1971 Trade Cas. (CCH) P73,665.

manufacture, fabrication, installation or sale, but shall not include any assets or operations related to the manufacture of any product other than automatic sprinkler devices.”

The Final Judgment ordered ITT to “divest, within (2) years from the date of entry of the Final Judgment, all of its interest, direct and indirect...in the Fire Protection Division of Grinnell.” A separate subsidiary was incorporated on November 5, 1971, as Grinnell Fire Protection Systems Company, Inc. (“GFPS”)² According to secretary of state documents, Grinnell Corporation changed its name to ITT Grinnell Corporation (“ITT Grinnell”) on November 2, 1971. On July 1, 1972, ITT Grinnell entered into an Assignment and Assumption of Liabilities with GFPS (“1972 Assignment”), thereby transferring the assets and liabilities of the Fire Protection Division of ITT Grinnell to GFPS. The 1972 Assignment does not define the Fire Protection Division of Grinnell other than to reference the definition in the Final Judgment.

Please provide additional documentation to substantiate the position that the manufacture of pipe flanges would not be related to the manufacture of automatic sprinkler devices. It is EPA’s understanding that pipe flanges are a component of such systems. See enclosed Tyco Fire Protection Products’ 2014 description of the Grinnell G-FIRE Figure 71 Flange Adapter.

As explained in response to Request 2(a) above, when ITT Grinnell divested itself of the Grinnell Fire Protection Division, it retained the manufacturing and sales divisions. Those divisions became the foundation for the new Grinnell Supply Sales and Manufacturing (a/k/a Supply & Sales), which continued to fabricate pipe fittings, valves, and other mechanical components. Although pipe flanges may be a component of the piping systems that provide water to automatic sprinkler devices, Tyco did not acquire businesses engaged in manufacturing and distributing mechanical components such as flanges, valves, pipes and similar equipment until much later.

The 2014 Grinnell G-FIRE Figure 71 Flange Adapter identified in the Second Supplemental Request is unrelated to the Keddy Mill Site and unrelated to GFPS. The 71 Flange adapter is a Central Sprinkler Company design, manufactured in Anniston, Alabama, beginning in the 1990s. Tyco purchased the Central Sprinkler Company in 1999. See attached Exhibit 3, PRNewswire, “Tyco International Completes Acquisition of Central Sprinkler Corporation,” Aug. 26, 1999. In 2004, Tyco began rebranding Central Sprinkler Company products as “Grinnell.”

- c. Page 9 of the 1972 Assignment states that “ITT Grinnell does hereby grant, bargain, sell, convey, transfer, set over and assign to GFPS all of the aforesaid assets, properties, and business, both real and personal, tangible and intangible, of every kind and nature, wherever located, of the Fire Protection Division, which

² On February 14, 1986, the name of Grinnell Fire Protection Systems Company, Inc. was changed to Grinnell Corporation. On December 20, 2006, Grinnell Corporation was converted to a Delaware limited liability corporation and renamed Grinnell LLC.

existed at the close of business on June 30, 1972, (see Schedule A for balance sheet as of the opening of business on July 1, 1972)”

Please provide a copy of Schedule A of the 1972 Assignment.

Tyco has not located a copy of Schedule A of the 1972 Assignment.

- d. The Purchase and Sale Agreement relating to acquisition of the GFPS stock (“GFPS/Tyco Agreement”) provided by Tyco in its July 8, 2015 104e response is dated 1/16/76 and documents the purchase of 100% of the stock of GFPS. No Exhibits to the GFPS/Tyco Agreement were provided in the response.

Please provide the Exhibits to the GFPS/Tyco Agreement.

Tyco has not located copies of the exhibits to the 1976 GFPS/Tyco Agreement.

3. Information About Others:

- a. If you have information concerning the operation or ownership of the Site or the source, content or quantity of materials placed/disposed at the Site which is not included in the information you have already provided, provide all such information.
- b. If not already included in your response, if you have reason to believe that there may be persons, including persons currently or formerly employed by Respondent, who are able to provide a more detailed or complete response to any of these questions or who may be able to provide additional responsive documents, identify such persons and the additional information or documents that they may have.
- c. If not already provided, identify all persons, including Respondent’s current and former employees, who have knowledge or information about the generation, use, purchase, treatment, storage, disposal, placement or other handling of materials at, or transportation of materials to, the Site.

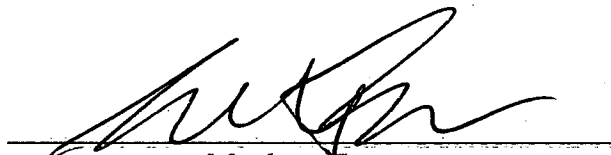
Tyco has no additional information or documents concerning the Site that are responsive to Request No. 3.

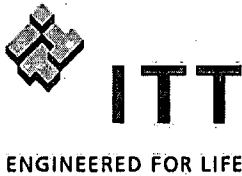
The following form of declaration must accompany all information submitted by Respondent in response to the Information Request:

DECLARATION

I am authorized to respond on behalf of Respondent and the foregoing is, to the best of my knowledge, information and belief, complete, true and correct.

Executed on 15 FEBRUARY, 2017


Matthew Tanzer
Vice President, Chief Ethics & Compliance
Officer
Johnson Controls



Lori Marino

VP, Deputy General Counsel & Corporate Secretary
ITT Inc.
1133 Westchester Avenue
White Plains, NY 10604
Ph: (914) 641-2186
F: (914) 696-2950

January 30, 2017

Susan Scott
Senior Enforcement Counsel
U.S. Environmental Protection Agency
Office of Site Remediation and Restoration
5 Post Office Square, Suite 100 (OSRR07-4)
Boston, MA 02109-3912

Re: Keddy Mill Superfund Site

Dear Ms. Scott,

I am writing on behalf of ITT LLC (as successor in interest to ITT Corporation, "ITT") in response to the Invitation to Perform or Finance Proposed Cleanup Activities for the Keddy Mill Superfund Site (the "Site") that was sent to Tyco International ("Tyco") on December 21, 2016 (the "Tyco Invitation"). Please note that we are separately responding to a similar Invitation sent directly to ITT, which response is not the basis of this letter. This letter is specifically to address the role of Tyco, and to inform the EPA that, based on ITT's recently completed review of available information, we do not believe Tyco is a potentially responsible party ("PRP") under Section 107(a) of CERCLA with respect to the Site.

The documents we have reviewed, which have also been provided to EPA, provide us with the following information: On July 1, 1972, Grinnell Fire Protection Systems Company, Inc. ("GFPS") acquired the assets and assumed all the liabilities of the Fire Protection Division of ITT Grinnell. After that transaction occurred, ITT Grinnell continued to own the Site. To our knowledge, the Site was not part of the Fire Protection Division. ITT Grinnell separately conveyed the Site to Park Corporation on August 21, 1973. The stock of GFPS was acquired by Tyco from ITT Grinnell in 1976, i.e., after the Site had been conveyed to Park Corporation. Based on this information, it appears that GFPS did not assume either ownership of the Site itself or any liability associated with the Site when it acquired the Fire Protection Division of ITT Grinnell, and Tyco therefore did not assume either ownership of the Site or liability associated with the Site when it purchased the stock of GFPS.

We have included the 1972 Assignment and Assumption of Liabilities between GFPS and ITT Grinnell, the 1973 deed conveying the Site from ITT Grinnell to Park Corporation, and the closing documents from the 1976 sale of the capital stock of GFPS from ITT Grinnell to Tyco for your review.

Notwithstanding anything contained in this letter, ITT reserves the right to change its position should information contrary to current findings become available. Nothing in this letter shall be considered a waiver of any rights, remedies, or defenses available to ITT under state or federal law, or under any previous agreement between Tyco, ITT, ITT Grinnell Corporation, ITT Industries of Canada, Ltd., ITT Corporation, and/or GFPS.

Sincerely,

A handwritten signature in cursive script, appearing to read "Lori Marino".

Lori Marino

VP, Deputy General Counsel & Corporate Secretary

Attachments

tyco**Fire & Building
Products**

February, 2006

Volume 4, Issue 1

The Station House

*A News Letter for AHJ's,**Fire Sprinkler Contractors & Underwriters*

Fire Sprinkler History - NFSA , NFPA & Tyco



In This Issue

- **NFSA Celebrates 100 Year Anniversary**
- **Fire Sprinkler Industry History**
- **GEM, Central & Star History**
- **Fire Sprinkler Success Stories**
- **VRP Update**

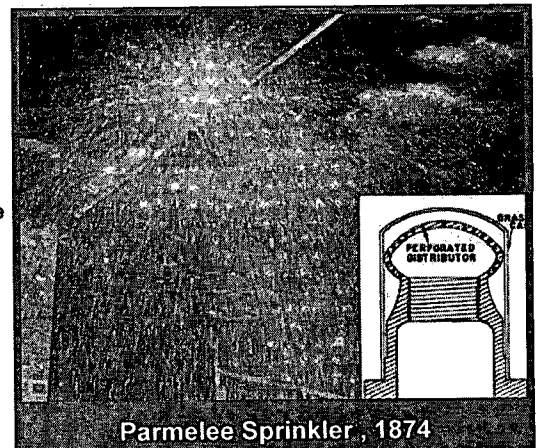
On November 22, 1905, John Moore of General Fire Extinguishing Company, W.G. Allen of Niagara Sprinkler Company, and George M. Myers of Standard Fire Extinguishing Company, without the benefit of today's modern air travel, met and formed the National Automatic Sprinkler Contractors Association, later to become the National Fire Sprinkler Association. From its inception, the names Grinnell (now the Gem product line), Star, and Central, have been forever intertwined with the history and development of the Association.

The year 2005 finds the NFSA involved in all aspects of the industry. From code initiatives to educational seminars, its activities are highly visible throughout the industry. The organization has successfully transformed the Association into an extremely visible and influential voice for the NFSA's contractor, supplier, and manufacturer members. The evolutionary process of the association is tied directly to the history of its members, and the names of Central, Gem, and Star have played a prominent role ...

The 1800's – A Time of Need and the Emergence of Leaders

Look through the time machine to the year 1806 – ninety nine years before the historic meeting of the three companies in St. Louis, and we find John Carey filing a patent in London for a perforated pipe concept for fire protection systems. The system never gained acceptance in the United States, but, in 1806, the country was still in development following its War of Independence. In 1809, William Cosgrove of London patented an improvement to the system that used 190°F rated fusible link actuators, an outside control valve, and a fire department connection.

The New England States led the nation's industrial progress, and mills (and fires) were common. Records in the United States show that the first 'sprinkler' system (using the perforated pipe method) was installed in the picking room of the Suffolk Manufacturing Company in Lowell, Massachusetts. Responding to continued concerns, the Providence Steam and Gas Company, later to become the Grinnell Company, was founded in 1850, and it took the lead in fire protection installations for the New England mills with perforated pipe installations. Several improvements were made to the original perforated pipe installations, including those of James B. Francis, who spaced 1/10 inch holes at 9 ft. intervals, and who later experimented with sprinklers, using cords and gutta percha (a gummy, stringy substance that was also used in golf balls) to actuate the devices.

**Parmelee Sprinkler , 1874**

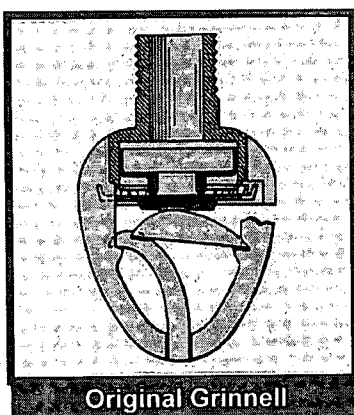
History of Sprinkler Systems

In 1860, Barnabas Wood of Nashville, Tennessee patented the first basic sprinkler. The Wood sprinkler included a eutectic fusible solder link – a foundation for sprinklers. The operating temperature of the sprinkler was 165 °F, and this operating temperature is still a standard for solder link sprinklers.

Parmelee and Grinnell – Names Forever Linked

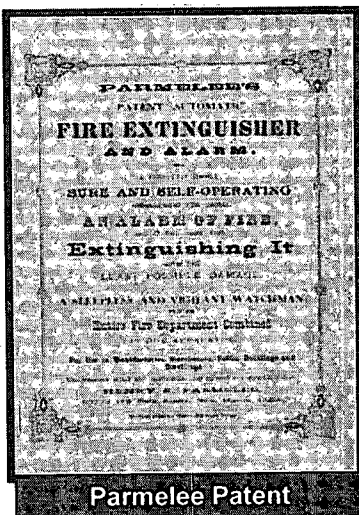
In 1864, Henry Parmelee produced his first automatic sprinkler. Five years later, in 1869, Frederick Grinnell purchased controlling interest in Providence Steam and Gas. The names of Grinnell and Parmelee, through their common interest in fire protection, were to become linked in a matter of a few years.

Frederick Grinnell had an interest in fire protection and worked with James Francis of Lowell, Massachusetts using perforated piping systems for fire protection. After patenting the first 'practical automatic sprinkler' in 1874, Henry Parmelee installed it on a combined heating and fire protection system in his Mathushek Piano Manufacturing plant in New Haven, Connecticut. Parmelee drew a second patent in 1875 for a design that incorporated a cap that was held in place by solder, covering a perforated distributor (deflector in today's sprinklers). The sprinklers under



Original Grinnell

this design were purchased by Thomas J. Borden for two of his Fall River, Massachusetts mills. With some success encountered, Parmelee began designing and installing sprinkler systems for others. The fact that in those early years, installations were not being driven by code mandates or insurance savings, indicates that there were genuine concerns about controlling fires and saving property and lives.



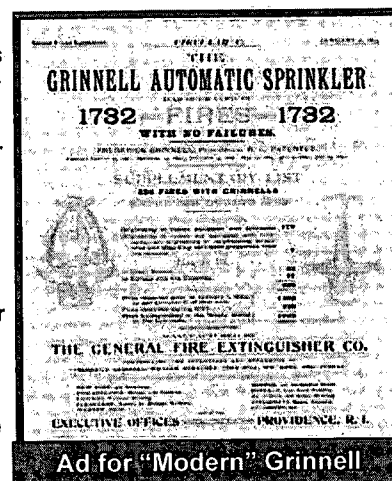
Parmelee Patent

In 1878, the same year that Frederick Grinnell patented a perforated "sprinkler tube", he entered into an agreement with Henry Parmelee to manufacture the Parmelee sprinklers on a royalty basis. That same year, Parmelee patented a fifth sprinkler design that featured improved sensitivity and a more uniform discharge pattern. Thousands of these sprinklers would be installed over the next three years. As the numbers of installations grew, so did the reputation for effectiveness in fire situations.

The results began to be reflected by insurers (rates and requirements), and specifications for sprinklers began to appear. In 1878, there were no telephones, airplanes, or electronic communications, but the reputation of sprinklers and their record were growing.

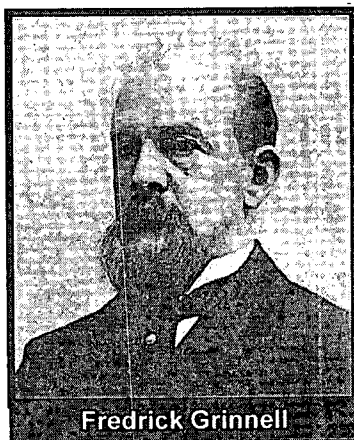
Over 200,000 sprinklers were installed between 1878 and 1882, and innovations grew with the burgeoning market. The Providence Steam and Gas Pipe Company adopted the first 'pipe schedule system' in 1878. In 1879, Grinnell patented the industry's first dry pipe valve, but the valve remained unpopular until refinements were made to the product in 1885. By 1880, Boston Manufacturers Mutual had adopted a formal pipe schedule for perforated pipe systems, and insurance companies were beginning to reduce rates to protected properties.

Henry Parmelee and Frederick Grinnell officially joined to manufacture sprinklers, and in 1881, the Parmelee system was reported to be in use in 214 facilities. The sprinklers were reported to have controlled fires in nineteen locations between 1877 and 1881. The year 1881 also found Frederick Grinnell patenting the first 'sensitive' automatic sprinkler. The design incorporated some of the features of today's automatic sprinklers – a ½ inch orifice and a tooth-edged deflector. The new design was also more sensitive, and the ½ inch orifice was less apt to clog in flow conditions. The ½ inch orifice was a far larger waterway than 1/10 inch holes in perforated pipe! In 1882, the Providence Steam and Gas Company introduced the Grinnell Model A sprinkler.



History of Sprinkler Systems

In 1883, Sir William Mather visited Frederick Grinnell in Providence, Rhode Island. Mather, of England, acquired the rights to the Grinnell sprinkler for the Eastern Hemisphere, including Europe, Australia, and India. Mather was one half of the famous Mather and Platt combination that remained instrumental in European fire protection until their acquisition by Wormald (of Australia) in the early 1980's. Through Mather's efforts, sprinklers today continue to be referred to as "le Grinnells" in France.



Frederick Grinnell

Factory Mutual began testing sprinklers in 1884, and records show a total of eighteen different types of sprinklers being available. The first recorded sprinkler report was also published that year. In 1885, Grinnell patented a 'bellows' differential dry pipe valve, and John Wormald of England wrote the first sprinkler installation rules. 1886

found the establishment of UL, and Factory Mutual adopted sprinkler installation rules one year later, in 1887. The industry had become international in scope, and codes and insurance were recognizing the importance of fire protection.

The 'English'-style alarm valve was developed by Providence Steam and Gas and General Fire Extinguisher in 1888. It became the first widely used alarm valve in the industry, and by 1891, the first of the Grinnell glass disc sprinklers was sold. The sprinkler became a standard and was in distribution through 1935. The sprinkler was formally approved by Factory Mutual in 1897.

The year 1893 was somewhat monumental for both Grinnell and Star. Frederick Grinnell consolidated the Providence Steam and Gas Company with Neracher and Hill Sprinkler Company of Warren, Ohio to create and incorporate the General Fire Extinguisher Company – one of the founding names of the National Automatic Sprinkler Contractors Association. In the same year, William Esty founded the Esty Sprinkler Company (later to become Star Sprinkler) in Laconia, New Hampshire.

Two years later, in 1895, in response to complaints of improper installations, the National Fire Protection Association was founded by Frederick Grinnell and representatives of five insurance companies. The initial membership was comprised of twenty rating organizations and inspection bureaus. The NFPA was formed in Boston in 1896, standards for the installation of automatic sprinklers written, and the first NFPA standard issued by the Committee on Automatic Sprinklers. Three additional committees were appointed one year later to address sprinklers; fire doors, shutters, and wire glass; and hose and hydrants. By 1899, through the efforts of the newly formed NFPA, installation requirements for sprinklers had become somewhat uniform throughout the United States and Canada.

The Turn of the Century – The Evolution of an Industry

By 1901, Grinnell and Esty had become names in the industry. UL began the testing and listing of sprinklers, and fire sprinkler fitters unions were formed in Chicago and St. Louis. The year 1903 was a tragic year in which 170 died in the Rhodes Opera House fire in Boyertown, PA, and the Iroquois Theater fire in Chicago claimed 602 lives. Today's Minneapolis Sprinkler Fitters' local 417 was also established.

1905 saw the historic meeting in St. Louis at which the National Automatic Sprinkler Contractors Association was formed. That same year, records show seventy-seven pages of the NFPA record being devoted to ongoing debates over sprinklers. The $\frac{3}{4}$, 1, 1-1/4 pipe schedule for three sprinklers was adopted by NFPA and became a standard that was used until the formal NFPA elimination of $\frac{3}{4}$ inch steel pipe in 1940.

The early 1900's were a time of transition for the industry. Sprinkler fitters local 183 was formed in 1906, followed by the Kansas City local and the first published "NFPA Quarterly" in 1907. The year 1909 saw sprinklers installed in a school in Buffalo, New York for the first time.

Fire tragedies continued, as the Triangle Shirtwaist Fire in New York City claimed the lives of 145 people in 1911. Despite the growing popularity of sprinklers with building owners and insurance carriers, the bulk of the nation's industries remained largely unprotected. By 1913, a study showed that after 38 years of fire sprinkler installations, only five people had been killed in fires in sprinklered properties. That year saw a formal Life Safety Code being established by the NFPA.



Contact us on the Web at: www.tyco-fire.com for more information.

History of Sprinkler Systems

At a meeting at the Congress Hotel in Chicago in 1914, the National Automatic Sprinkler Contractors Association formally changed its name to the National Automatic Sprinkler Association. At that meeting, committees were formed by the Association to work with both Underwriters Laboratories and Factory Mutual. That same year saw sprinklers being installed for the first time on seagoing vessels. Grinnell sprinklers were installed on both the 'Imperator' and 'Vaterland' of the Amerika Lines.

Local 669 Road Sprinkler Fitters Union (as we know it today) was formed in 1915, and one year later, NFPA began "Fire News" as a member newsletter. In 1919, General Fire

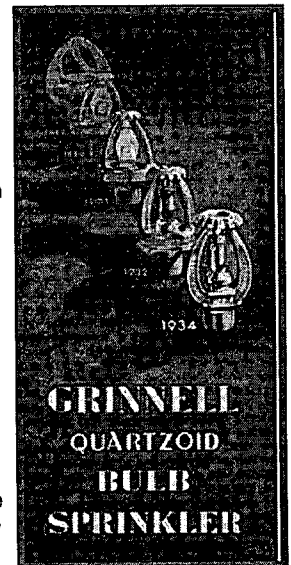
A dream comes true
—This new automatic sprinkler invention delays fire quicker than ever—

GRINNELL COMPANY
Incorporated in the State of New York
New York, N. Y.

Extinguisher formally became Grinnell Corp. and UL published its first "Standard for Automatic Sprinklers". That same year, after studies had shown that many sprinkler failures were a result of improperly closed valves, the NFPA adopted a standard for valve supervision.

The NFPA created a separate standard for 'Class B' systems in 1930, and UL recognized and listed the 'Junior System'. Light Hazard and 'open sprinkler' Extra Hazard classifications appeared for the first time in the NFPA code. The Grinnell "Duraspeed" sprinkler, a staple in the industry through the early 1990's made its introduction in 1931 (patented in 1932) – the same year in which tests showed quartzoid bulb sprinklers to be more heat sensitive than their solder link counterparts. In 1933, the NFPA issued its first guide to fire departments regarding the use of fire sprinkler systems.

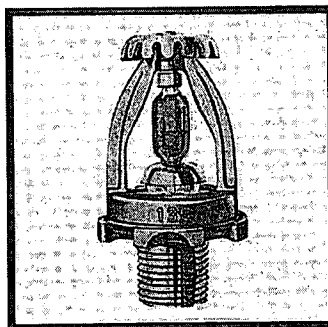
Special Hazard systems, much as we know them today, were pioneered by the introduction of the Grinnell 'Mulsifier' nozzles in 1935. The nozzles were designed for flammable liquid applications, and are still offered in the Grinnell design today. Consolidated Edison in New York pioneered the use of water spray for transformer protection that year when a system was installed at their Hells Gate Station. In 1940, responding to the use of water spray systems, the NFPA issued a standard on spray nozzles and extinguishing systems. One year earlier (1939) saw the NFPA adoption of a standard on the Care and Maintenance of Sprinkler Systems. The industry was beginning to evolve into today's fire protection.



The Roaring 20's through the 30's - Laying Foundations for Today's Industry

One year later, in 1920, the first quick opening device was developed by Grinnell Corporation. The quick opening device was followed one year later by Grinnell's release of the first Quartzoid sprinkler.

Star Sprinkler Company came into existence in 1923, and was founded by T. Seddon Duke. 1925 heralded an NFPA standard on piping systems for fire protection, and National Fire Prevention Week was instituted two years later.



The War Years and Beyond – the Fire Protection Effort Continues

Tragedy strikes Boston in 1942 at the Coconut Grove Nightclub when 492 people are killed in a fire. The National Automatic Sprinkler Association formally became the "National Automatic Sprinkler and Fire Control Association" in 1944. One year later, the first Grinnell "Quartzoid" sprinkler was listed by UL. That same year, indifferent to an ongoing war effort, fire killed 119 people at the Winecoff Hotel in Atlanta.

Following the war, in 1947, the National Automatic Sprinkler and Fire Control Association appointed a fact finding committee. This committee evolved into the Engineering and Standards Committee that continues to be respected throughout the industry today.

History of Sprinkler Systems

Star brought its new Type FM-C spray nozzles to the market in 1951. The nozzles represented a joint effort between Star and Factory Mutual Research. One year later, in 1952, foam additives were introduced as foam-water systems for flammable liquids, and one year later, polar solvent type foam was developed. 1952 also



saw the appointment of Raymond J. Casey as the Executive Director of the National Automatic Sprinkler and Fire Control Association.

The year 1953 was a pivotal year for today's fire sprinklers. NFPA Pamphlet 13 was revised to recognize what is today's 'standard sprinkler'. Older distribution patterns were replaced by a standardization of performance criteria. NFPA that year also recognized combined dry pipe and preaction systems. The Society of Fire Protection Engineers was chartered in both Los Angeles and Chicago. The following year, NFPA published a standard for combined foam and water spray systems, and by that time, all sprinkler manufacturers were publicizing their new spray sprinklers – largely by way of the "NFPA Quarterly". By 1955, the NFPA standards made the new distribution patterns 'standard', and increased the maximum sprinkler spacings for Ordinary Hazard systems from 100 sq. ft. to 130 sq. ft. per sprinkler – a spacing that has held through today's standards. The standard allowed the use of 8 inch

pipe, and increased the maximum allowable number of sprinklers using pipe schedules for the larger pipe.

Grinnell introduced the 'Selfcon' limited water sprinkler system in 1957, followed by the 'Primac' high speed deluge system in 1958. The 'Primac' system uses a small explosive charge to open the deluge valve that supplies a pre-primed network of piping to nozzles. The systems have been used for years in occupancies that range from ordinance production to the mixing of rocket fuel. Until the discontinuance in the late 1990's, thousands of systems had been installed.

From the 60's – Today's Leaders Emerge and Paths Cross In 1961, the National Automatic Sprinkler and Fire Control Association hired its first field representative and based the position in Los Angeles. In 1962, NFPA issued its first formal standard on foam-water sprinklers and water spray systems, and the first National Sprinkler Industry seminar was held in Burlingame, California. The following year, Factory Insurance Association (later to become the Industrial Risk Insurers) issued a report on the protection of high piled storage. The report stated that extinguishment could not be reached for storage in excess of 20 feet in height.

The name Bill Meyer came to prominence in 1964, not with Central Sprinkler, but when the former pipe fitter risen to sales manager from "Automatic" Sprinkler purchased Star Sprinkler Company from T. Seddon Duke, Bill assumed the role of company president, and Duke would remain CEO of the company until his death in 1968. Bill later sold the company in 1968 to Insurance Company of North America, but remained with Star as the Vice President of the manufacturing division.

In 1969, ITT acquired Grinnell Company, and the Grunau Company of Wisconsin purchased Vogel Sprinkler, placing Grunau into the fire sprinkler manufacturing business. The acquisition of Grinnell by ITT was followed by the divestiture of Grinnell Fire Protection by ITT, but ITT retained the manufacturing and sales divisions – laying the groundwork for Grinnell Supply Sales as a separate entity. That same year, 1971, saw the introduction of the industry's first concealed automatic sprinkler by Star – the Model G 'Unspoiler'.

The 70's – Names of Prominence and More Change 1973 proved to be another historical year in the industry. The NASFCA expanded its staff and named John Viniello the Assistant Director of Codes and Standards, and Bill Meyer left INA and Star to purchase Central Sprinkler Company in Lansdale, Pennsylvania. Assuming the role of company president, Bill immediately divested the company of its contracting side of the business to concentrate on manufacturing sprinklers, valves and devices. Grinnell introduced the first 'on-off' sprinkler, the AquaMatic, and Star introduced its 'Quick-E' sprinklers.

History of Sprinkler Systems

Within the NFPA, the standards were revised to permit hydraulically calculated systems, and a sub-committee was appointed to develop a residential sprinkler standard. The industry was beginning to look more and more as it appears today, and foundations were laid for change.

Within the NASFCA, in 1974, separate Contractors and Manufacturers councils were formed. In 1975, a residential standard, NFPA 13D was adopted – one year after the creation of the United States Fire Administration. Despite the growing industry, the Beverly Hills Supper Club fire in 1977 in Southgate, Kentucky killed 165 patrons and workers.

Edward Reilly was elected president of the NASFCA in 1978, and a new industry magazine, "FPC" was published for the first time. That same year, with interest in a new market segment growing, the United States Fire Administration began a residential fire test program in conjunction with Factory Mutual.

In 1979, Central Sprinkler bought the Meyertech Corp., manufacturers of a quick connect style fitting, only to sell the acquisition to Grinnell Corporation. INA sold Star Sprinkler Company to Chemetron, adding fire sprinklers to the gaseous systems and alarm and detection capabilities of Chemetron. The names of Central, Grinnell, and Star continued to be focal points of the industry.

The 80's and Beyond –

In 1980, concerns for life safety initiated the Omega Residential Research project under the guise of the United States Fire Administration (Harry Shaw) with major involvement of Central Sprinkler Company. That same year, Grinnell achieved the first listing for a residential sprinkler (the Model FR-1). Central would follow with residential sprinkler listings one year later. With Life Safety efforts and research escalating in 1980, fire deaths again made headlines when the MGM Grand fire in Las Vegas killed 85 guests and workers. The fallout of the tragedy would drive one of the nation's first fire sprinkler retrofit ordinances for high rise buildings.

In 1983, the NASFCA formally changed its name to the National Fire Sprinkler Association, or the NFSA, as we all know it today. Central Sprinkler advertised the first horizontal sidewall sprinklers for residential use, and Grunau purchased Star Sprinkler from Chemetron. That same year, Star introduced its PH-3 Institutional Sprinkler, a product that became, and still is, the industry standard for standard response institutional sprinklers.

Factory Mutual began research on a product that would be known throughout the industry as the ESFR sprinkler, and the NFPA divided Extra Hazard occupancies into two separate classes – as they exist today.

In 1984 John Viniello was elected to the presidency of the NFSA. That same year, the NFSA publication that all members receive today – "Grass Roots" – was printed and distributed for the first time. Another presidency was also changing – Bill Meyer stepped down as the president of Central Sprinkler Company (but remained as the CEO), and his son, George Meyer, assumed his father's leadership role. That same year, Grunau/Vogel consolidated the manufacturing of fire sprinklers, valves, and devices under the 'Star' name. Star then proceeded to pioneer sales to independent distribution within the fire protection industry – key to the success of Star. Destined to become the product of choice in residential and retrofit applications, the first B.F. Goodrich – "BlazeMaster®" systems were installed in 1984.

One of the major headlines in 1986 dealt with the deaths of 97 people at the DuPont Plaza Hotel in San Juan, Puerto Rico. Never making a major headline, Tyco acquired Grinnell Supply Sales and Manufacturing that year. One year later, Factory Mutual issued its first set of guidelines for the use of ESFR sprinklers for the protection of rack storage, and, under mounting pressure, BOCA adopted codes calling for the use of fire sprinklers in multi-family structures.

In 1988, the industry's first Factory Mutual approved ESFR sprinkler was introduced to the market by Grinnell. Mixing storage and office disasters, the Safeway Warehouse and Interstate Bank fires that year had the same effect in California that the MGM Grand had in Nevada – California enacted retrofit ordinances, and the sprinkler industry geared for the Los Angeles high rise retrofit business. As retrofit high-rise fire sprinklers were being installed in California and Nevada, a fire killed 87 people at a sprinklered property in New York City – the Happy Land Club. The results of an investigation showed that the sprinkler system was improperly designed and installed. One year later, in 1991, a fire in the One Meridian Plaza high rise in Philadelphia resulted in the deaths of three firefighters. The response was the same as had been experienced in Nevada and California – Philadelphia enacted a high rise retrofit ordinance. The pattern is very clear – sprinklers work, and deaths drive changes to building codes.

The industry's first ELO (Extra Large Orifice) sprinkler was pioneered and introduced by Central Sprinkler Company in 1992. Grinnell followed in 1993 with the introduction of the industry's first 'residential shut off valve' – a device that effectively diverts all water supply to the fire protection system in the event of a fire sprinkler activation in a residential application.

History of Sprinkler Systems

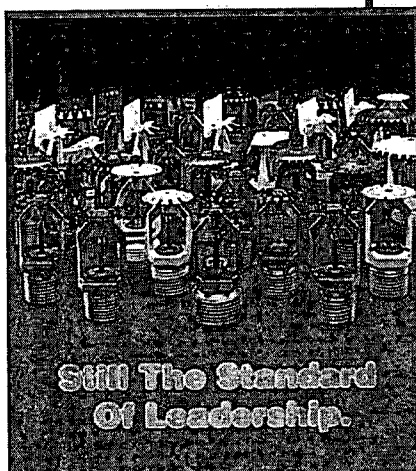
That same year, the NFPA recognized the emergence of water mist technology and established a technical committee for it.

The NFPA celebrated its 100th birthday in 1996, and the annual convention in Boston drew the highest attendance figures of any other U.S. fire sprinkler show in history. Grinnell exhibited its first low pressure, water mist nozzles at that show – the AquaMist series – for flammable liquids, light and ordinary hazard, and marine (shipboard) applications. History was also being made within the industry, as Tyco International acquired Star from Grunau, applications. One year later, in 1997, Star introduced its new 'Stealth' concealed sprinkler – twenty-six years after introducing the industry's first concealed sprinkler.

In 1999, Central Sprinkler Company was acquired by Tyco International, giving Tyco three of the industry's oldest and most recognizable brand names – Central, Gem, and Star. The acquisition completes what was almost historically eerily meant to be – without tie to fire protection. The Grinnell R&D facility in Cranston, Rhode Island, is the site of a former foundry that produced cannon balls during the Civil War. In Lansdale, the home of Central Sprinkler Company for many years, the old structure once housed a foundry in which cannons were produced for the same war effort. Through the fire protection industry, the sites of the brands that once produced cannons and cannon balls for a Civil War, have been brought together by Tyco International.

The industry's first Extended Coverage sprinkler for storage was introduced by Tyco Fire in 2000.

The past five years have seen added changes within the industry. Codes continue to evolve through the efforts of the NFSA and its members, more retrofit ordinances have been passed, and residential sprinklers are now common in multi-family dwellings, as well as in many single family homes where communities such as Scottsdale, Arizona, and Addison, Texas have recognized their importance in saving lives and property.



2003 saw another horrific nightclub fire in Warwick, Rhode Island where 100 people were lost. This fire inspired immediate changes to the standards for occupancy protection.

Technology continues to advance, and, if anything, fire sprinkler protection is more affordable than ever before. Through it all, the NFSA, Central, Gem, and Star continue to be linked in their efforts to improve fire safety.

Central, Gem, and Star are proud to have played a large part in the industry's history and wish the NFSA another 100 years!

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CHALLENGES HAVE CHANGED...

SO HAVE WE.

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Remember State Fire Marshal, Your VRP Statistics Are Attached ...

Your state's Voluntary Replacement Program Statistics are attached to this Newsletter. The Statistics for the VRP are state and Program specific. You may distribute these statistics or this newsletter to your constituents. We encourage you to pass along the information contained in this newsletter and the positive progress that is being made in the VRP.

Fire Sprinklers Never Sleep – Success Stories

1– Fire Sprinklers Save Macy's

An item on the Los Angeles NBC 4 TV station on December 6, 2004, said, a fire apparently sparked by overheated machinery in an elevator control room at the Glendale Galleria triggered a fire sprinkler that doused the flames, authorities said.

The fire was reported about 11:35 p.m. Sunday night on the second floor of the Macy's store at the shopping mall, said Glendale fire Captain Carlos Guerrero. No injuries were reported. The fire was out by the time firefighters arrived.

The flames were confined to the control room containing the motor that powers the elevator, and did not involve the elevator or the elevator shaft, he said.

Fire crews vented the building and drained off the water, and the store was able to open for business.

Reprinted from FPC Magazine

2– Sprinklers Control Hotel Fire

Washington— four sprinklers controlled an unintentional fire in a large hotel ballroom, limiting damage to the building and alerting the fire department.

The wood frame hotel, which measured 200 feet (61 meters) by 100 feet (30 meters), had a flat, built-up roof supported by wooden trusses and covered with asphalt and tar. The unoccupied ballroom was protected by a wet-pipe sprinkler system, as was the attic above it.

A 911 call from a passerby at 9:56 p.m. alerted firefighters to a column of smoke coming from the hotel ballroom. The call was followed shortly afterwards by a call from the monitoring company, reporting a water flow alarm.

Responding fire crews noted light-colored smoke coming from a corner of the ballroom roof when they arrived on the scene, and the incident commander sent a ladder and engine crew to the roof to locate the source

As firefighters began opening the roof near an HVAC unit, interior crews pulled down ceilings located at the seat of the fire.

Sprinklers in the concealed space were keeping the fire under control, but attic insulation blocked some of the water spray, allowing the blaze to continue burning. Eventually, the entire space was opened from the ceiling to the roof, and the fire was extinguished.

Investigators determined that the rooftop heating equipment was involved in the ignition of the hotel's framing materials, but they couldn't determine the exact ignition sequence.

Damage to the building, valued at approximately \$15 million, was estimated at \$100,000. Damage to its contents was estimated at \$60,000. There were no injuries.

Reprinted from NFPA Journal

3– Blind Man Saved By Sprinklers

In an article in the *King County Journal* on October 1, 2004, a blind resident of Peter's Creek Retirement Home was saved early on September 30, 2004, when overhead sprinklers put out a fire on his bed.

Redmond Fire Investigator, mark Pease, said the fire was started by an electric blanket on the man's bed. The fire burned through a two-foot-square area at the foot of the mattress while the man slept. It was only when the fire sprinklers activated that the man woke up and made his way out of the room and into the hallway. He was unaware of the fire until the firefighters told him.

The fire on the mattress had been nearly extinguished by the sprinklers. Redmond fire codes require retirement homes and other commercial buildings larger than 3000 square feet to have sprinklers. Without sprinklers, the fire could have threatened the entire facility, which had 69 residents.

Reprinted from FPC Magazine



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Our History

1850-1899

- 1850.The Providence Steam and Gas Pipe Co. is formed. Frederick Grinnell will eventually purchase a controlling interest.
 - 1882.Frederick Grinnell patents "his famous sensitive valve automatic sprinkler....recognised by underwriters everywhere as practically perfect."
 - 1883.An Englishman, Mr (later Sir) William Mather, purchases patent rights to the Grinnell sprinkler for all areas outside North America. His company, Mather and Platt, becomes the father of the U.K. sprinkler industry.
 - 1885.John Wormald, then of the Mutual Fire Insurance Corporation (Manchester, England), wrote the first pamphlet of rules for automatic sprinklers.
 - 1886.Mather and Platt installed the first sprinkler in Australia, at Laycock and Co.
 - 1889.Mr. (later Sir) John Wormald, of Mather and Platt, Ltd., appoints his younger brother, Joseph Dawson Wormald, Australian sales agent for the Grinnell sprinkler head. Along with a partner, Stanley Russell, Joseph Wormald establishes Russell and Wormald business, which continues operating in this name until 1900.
 - 1892.Providence Steam and Gas Pipe Co. is combined with sprinkler manufacturers from New York and Ohio to form the General Extinguisher Co., with Frederick Grinnell as President.
 - 1896.The first sprinkler system installed in New Zealand was at Sargood and Son, Dunedin.
 - 1899.Wormald installed their first system in New Zealand at Northern Roller Mills, Auckland.
-

1900-1949

- 1900. Wormald Brothers, predecessor of Wormald International, is formed when Harry Wormald joins his brother in partnership.
 - 1906. The first American District Telegraph company (ADT) sprinkler supervisory system was marketed.
 - 1911. The Wormald partnership became Wormald Brothers Limited.
 - 1919. General Fire Extinguisher Co. becomes the Grinnell Company, Inc.
 - 1941. Wormald Brothers was registered in New Zealand.
 - 1949. Formation of Wormald Brothers Industries Limited as a public company.
-

1950-Present

- 1960. Ansul takes off. Over a two year period, they'll design the first easy-to-recharge fire extinguisher, create the market for restaurant hood and duct fire protection, and train NASA's first fire rescue crew. Tyco Inc. is formed as an investment and holding company in Waltham, Massachusetts, USA. The two primary holdings are Tyco Semiconductor and the Materials Research Laboratory, which studies materials and devices with applications in the fields of solid state sciences and energy.
 - 1962. The Materials Research Laboratory and Tyco Semiconductor are merged. The business is supported by U.S. Government research contracts. But soon, management recognises the commercial applications of its work and Tyco begins the search acquisitions to develop product, manufacturing and marketing capabilities.
 - 1964. Tyco becomes a publicly owned company trading on the New York Stock Exchange (NYSE-TYC).
 - 1976. Tyco has grown to 3,600 employees, with divisional offices across the U.S. when it acquires the largest member of the corporate family to date, Grinnell Fire Protection Systems Company. Grinnell has a network of sales and installation offices throughout the U.S., Canada and Mexico.
 - Wormald acquires Mather and Platt, the company which had created Wormald nearly 100 years before.
 - 1978. Wormald acquires Ansul.
 - 1986. Tyco acquires Grinnell Supply Sales and Manufacturing, a manufacturer and distributor of flow control and fire protection products.
 - 1990. Seven years after a merger between German fire protection leaders Total and walter, the company, now known as Total Walther Feuerschutz, is acquired by Wormald.
 - Wormald International Limited, a US\$1 billion contractor and manufacturer of fire protection systems and products, joins the Tyco family. As a result, operation are extended to the United Kingdom, Europe, Asia and the Middle East, Australia and New Zealand.
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Tyco International Completes Acquisition of Central Sprinkler Corporation

Aug 26, 1999, 01:00 ET from Tyco International Ltd.

HAMILTON, Bermuda, Aug. 26 /PRNewswire/ -- Tyco International Ltd. (NYSE: TYC; BSX; LSE: TYI), a diversified manufacturing and service company, announced today that Central Sprinkler Corporation's (Nasdaq: CNSP) shareholders have overwhelmingly approved Tyco's acquisition of Central Sprinkler. Under the terms of the merger agreement, Central Sprinkler shareholders will receive \$30.00 in cash for each share of Central Sprinkler common stock. The acquisition was completed today.

Central Sprinkler, with annual revenues in excess of \$200 million, is a leader in the fire sprinkler industry. Central Sprinkler designs, manufactures, and distributes a complete line of fire sprinklers, valves and accessories, PVC pipe and fittings, steel pipe, and iron grooved products.

"Central Sprinkler is an excellent fit with our existing related businesses and operating efficiencies will result in an immediate positive impact on earnings," said L. Dennis Kozlowski, Tyco's Chairman and Chief Executive Officer. "The product line and customer base are very complementary to Tyco's existing fire sprinkler businesses in the United States, Canada, and Europe. This acquisition provides significant opportunities for enhanced growth as well as marketing efficiencies," he added.

Tyco International Ltd., a diversified manufacturing and service company, is the world's largest manufacturer, installer, and provider of fire protection systems and electronic security services, the largest manufacturer and servicer of electrical and electronic components and underwater telecommunications systems, the largest manufacturer of flow control valves, and has strong leadership positions in disposable medical products and plastics and adhesives. The Company operates in more than 80 countries around the world and has expected fiscal 1999 revenues in excess of \$22 billion.

FORWARD LOOKING INFORMATION

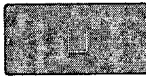
Comments in this earnings release concerning the impact from Central

Sprinkler on earnings, the ability of achieve cost reductions and growth goals, and expected fiscal 1999 revenues are forward-looking statements, which are based on management's good faith expectations and belief concerning future developments. Actual results may materially differ from these expectations as a result of many factors, relevant examples of which are set forth in the "Management Discussion and Analysis" section of the Company's 1998 Annual Report to Shareholders and the Company's 1998 Annual Report on Form 10-K.

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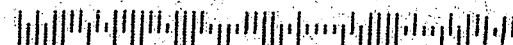
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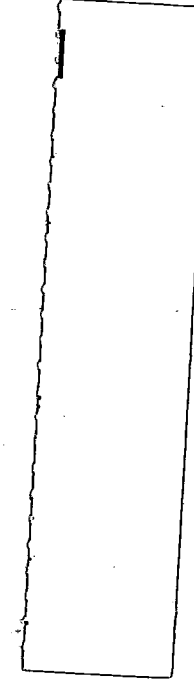
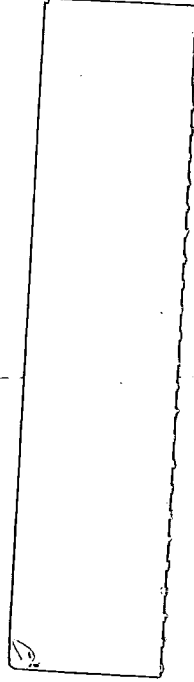
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